

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for loading samples on a microarray to perform hybridization reactions, the microarray being formed of a plurality of sub-arrays on a common substrate, the method comprising the steps of

placing the samples to be loaded onto a sample loading array, the samples located on the sample loading array in physical alignment with the location of the sub-arrays on the microarray, the sample loading array being a planar member having two planar surfaces with a plurality of micro-channels formed extending into it between the two surfaces, the samples being loaded into the micro-channels without the samples contacting the microarray, and a porous membrane attached to it on one of its faces; and

then placing the sample loading array in contact with the microarray under conditions so that molecules in the samples can hybridize to probes in the aligned sub-arrays, the conditions including fluid placed on the membrane to permit the samples in micro-channels to flow into contact with the substrate on the microarray so that a hybridization reaction can occur.

2. (withdrawn) A microarray hybridization chamber for parallel loading of samples comprising:

a sample loading array comprising a plurality of micro-channels having a first open end on a first side of the channel array and a second open end on a second side of the channel array, said first end and second end defining a channel in fluid communication with the first side of the channel array and the second side of the channel area, each channel having a longitudinal axis passing through its center and defining the center of the channel;

a microarray comprising a plurality of sub-arrays;

a membrane in contact with the second side of the channel array to close the second end of the micro-channels and to allow for the selective passing of liquids and molecules through the membrane and through the micro-channels; and

a gasket, the gasket being placed between the first side of the channel array and the microarray so as to provide a hybridization chamber, and wherein the center of the channels are aligned with the center of the sub-arrays.

3. (withdrawn) The chamber of Claim 2 wherein the gasket is dual sided and semi-adhesive.

4. (withdrawn) The chamber of Claim 2 wherein the sub-arrays are divided by a hydrophobic barrier.

5. (withdrawn) The chamber of Claim 4 wherein the hydrophobic barrier comprises of a hydrophobic group-bearing phosphoramidite.

6. (withdrawn) The chamber of Claim 5 wherein the hydrophobic group-bearing phosphoramidite is trityl protected phosphoramidite.

7. (currently amended) A method for loading in parallel at least one sample into a plurality of sub-arrays for conducting hybridization reactions, the method comprising the steps of:

providing a planar sample loading array which is formed as a planar member with two opposed surfaces and also comprising a plurality of micro-channels extending throughout the sample loading array between the opposed surfaces, each channel having a longitudinal axis passing through its center and defining the center of the channel;

providing a microarray comprising a plurality of sub-arrays on a common substrate;

providing a membrane on the surface of the sample loading array away from the subarray to allow for the selective passing of liquids and molecules through the membrane and through the micro-channels;

depositing different samples in a plurality of micro-channels without the samples contacting the microarray; and

placing the sample loading array in contact with the microarray such that the ends of the micro-channels opposite of the membrane are aligned with the sub-arrays of the microarray, so that different samples are placed in contact with different sub-arrays of the microarray and a hybridization reaction can occur.

8. (original) The method of Claim 7 wherein the samples are placed in contact with the subarray using either centrifugal force or pressure.

9. (original) The method of Claim 7 wherein the samples are placed in contact with the subarray using a vacuum.

10. (original) The method of Claim 7 wherein there is a gasket located between the sample loading array and the microarray.

11. (original) The method of Claim 7 wherein the sub-arrays are divided by a hydrophobic barrier area, wherein the area comprises an activated substrate.

12. (previously presented) The method of Claim 11 wherein the hydrophobic barrier comprises a hydrophobic group-bearing phosphoramidite.

13. (original) The method of Claim 7 wherein the sample is deposited into the plurality of micro-channels using a delivery system capable of simultaneous delivery of samples to multiple sites.

14. (withdrawn) A method for simultaneously hybridizing a microarray having multiple sub-arrays, the method comprising the steps of:

providing a first microarray which includes a plurality of sub-arrays;

depositing a sample for each sub-array on a planar sample loading array;

placing against the microarray a gasket to encompass the sub-arrays containing the sample; and

placing in contact with the gasket the sample loading array with each sample aligned with a one of the sub-arrays as to provide a sandwich hybridization chamber.

15. (withdrawn) The method of Claim 14 wherein the sub-arrays are divided by a hydrophobic barrier.

16. (withdrawn) The method of Claim 15 wherein the hydrophobic barrier is formed by a hydrophobic group-bearing phosphoramidite bound to the substrate.

17. (withdrawn) The method of Claim 14 wherein the sample is deposited into a plurality of sub-arrays using a delivery system capable of simultaneous delivery of samples to multiple sites.

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18. (withdrawn) The method of Claim 14 wherein the delivery system is either a bundle of capillary tubes, a fluid handling robot, or a robot designed for manufacturing spotted arrays.